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# TROPICAL FOREST NOTES



TROPICAL FOREST RESEARCH CENTER  
RIO PIEDRAS, PUERTO RICO

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## LIFTING PINE SEEDLINGS

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One of the factors preventing more widespread planting of the true pines (Pinus spp.) in the tropics is the present necessity of using potted stock instead of barerooted seedlings, such as are used throughout the temperate regions. Potted seedlings require more space, more equipment, more labor, and more money, both to produce in the nursery and to plant in the field.

However, potted seedlings are superior to barerooted in at least two ways: higher survival and faster early growth. It is with the survival that this note deals.

Three techniques were tested for lifting Pinus caribaea seedlings preparatory to outplanting.

1. Potted. Four weeks before outplanting time seedlings were lifted with a ball of earth from the seedbed and potted in 5 x 8 inch polyethylene bags. The seedlings were kept under shade the first week following potting, then moved into full sun. They were watered daily, and the few failures (less than 2 percent) were, of course, culled before outplanting.

2. Earth. The day before outplanting seedlings were lifted with a ball of earth and placed in individual polyethylene bags until actual planting time. In the very sandy soils of the experimental nursery "ball of earth" is somewhat a misnomer, as relatively little soil is actually lifted intact; however, the fine roots are little disturbed, and the lifting was as exactly as possible like that used for the first step in potting.

3. Barerooted. Seedlings were lifted carefully the day before outplanting, with little or no attached soil. They were bundled in moist peat moss immediately. In no case were the roots left exposed to the air for more than 120 seconds.

\* Operated in cooperation with the University of Puerto Rico.



All seedlings used were part of the same lot. They were eight months from seed, of excellent vigor and color, averaged 1.4 feet tall, and many were actively growing at the time of lifting. They were planted in single-tree mixture; that is, barerooted, earth, potted, barerooted, etc. in a row.

They were planted in January using ordinary farm laborers, on a clay loam soil at approximately 1600 feet above sea level, under a light, high shade.

Rainfall continued for three weeks after planting, and survival after 30 days exceeded 99 percent for all three treatments.

However, a dry spell which began the fourth week after planting continued uninterrupted for seven weeks before showers began, so survival was reduced appreciably after four months.

Treatment	Survival Percentage,
	May 1960
Potted	87.9
Earth	55.4
Barerooted	45.3

The superiority of the potted seedlings over the other two is obvious; however, the apparent increase in survival obtained by lifting with earth compared to barerooted was not statistically significant.

Summarizing, survival of pine seedlings potted four weeks before outplanting was much higher than survival of seedlings lifted with earth or barerooted the day before outplanting. However, survival of the latter two was near 50 percent, and when cost differentials justify planting more seedlings, barerooted planting of pine need not be disregarded on the basis of survival alone.

June 22, 1960